

Childhood Trauma and Psychiatric Disorders as Correlates of School Dropout in a National Sample of Young Adults

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The effect of childhood trauma, psychiatric diagnoses, and mental health services on school dropout among U.S.-born and immigrant youth is examined using data from the Collaborative Psychiatric Epidemiology Surveys, a nationally representative probability sample of African Americans, Afro-Caribbeans, Asians, Latinos, and non-Latino Whites, including 2,532 young adults, aged 21–29. The dropout prevalence rate was 16% overall, with variation by childhood trauma, childhood psychiatric diagnosis, race/ethnicity, and nativity. Childhood substance and conduct disorders mediated the relation between trauma and school dropout. Likelihood of dropout was decreased for Asians, and increased for African Americans and Latinos, compared to non-Latino Whites as a function of psychiatric disorders and trauma. Timing of U.S. immigration during adolescence increased risk of dropout.

A staggering number of adolescents fail to complete high school despite increased academic resources and attention to school system accountability. The National Center for Education Statistics (NCES; Laird, Kienzl, DeBell, & Chapman, 2007), in its most recent report using nationally representative time-series data, found the overall rate of dropout for youth 16–24 was 9.4% with a modest decrease in rates over the past three decades. However, discrepancies and variation in the reporting of dropout status (Kaufman, 2004) obscures the depth of this educational crisis, with overall estimates running as high as one third of students dropping out of school, and with increased risk for Black and Latino students (Swanson, 2004).

Although much attention has been given to family (Jimmerson, Egeland, Sroufe, & Carlson, 2000) and

school (Suh & Suh, 2007) factors related to dropout as well as individual factors such as school engagement (Janosz, Archambault, Morizot, & Pagani, 2008), there has been less attention to mental health factors related to school dropout. Some of the school dropout crisis may be explained by experiences of traumatic events (Dyregrov, 2004) or chronic exposure to high-stress environments that may lead to or exacerbate psychiatric distress or disorder (Shnurr, Friedman, & Bernardy, 2002). Examples of trauma include the direct experience or witnessing of physical abuse, sexual abuse and assault, domestic violence, community or school violence including aggressive and threatening peer victimization, severe neglect, traumatic injury, and traumatic loss of a loved one (Cohen, Mannarino, & Deblinger, 2006). Previous examination of childhood trauma (Broberg, Dyregrov, & Lilled, 2005; Harris, 1983) and psychiatric disorders (Fortin, Marcotte, Potvin, Royer, & Joly, 2006) correlated with risk of dropout has been primarily limited to small nonrepresentative samples. In this study, we provide estimates of dropout status in a nationally representative sample of young adults and explore correlates to dropout status using data from

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Collaborative Psychiatric Epidemiological Surveys (CPES), the most comprehensive psychiatric epidemiological study to date (Heeringa et al., 2004).

Traumatic Stress and Mental Health as Mechanisms to Explain School Failure

Alexander, Entwistle, and Kabbani (2001) argue that dropping out of school is not an event but rather a process that begins as early as first grade, influenced by sociodemographics, family stress (e.g., frequent moves, divorce), and parental and personal resources. Throughout this process, many behavioral factors, such as tardiness, absenteeism, fighting (Suh & Suh, 2007), and delinquency and drug use (Newcomb et al., 2002) have been shown to predict school dropout when controlling for academic and demographic correlates. Understanding the influence of these correlates may be strengthened by exploring whether experiences of traumatic events, chronic stress, and psychiatric diagnoses are related to student outcomes. While the preponderance of research on school dropout focuses on behavioral predictors as primary causes of school failure, in this study we focus on earlier childhood traumatic stress as an exogenous variable, which has an indirect effect on school achievement through maladaptive behaviors (Christle, Jolivette, & Nelson, 2007) that reflect psychiatric symptomatology. Research in the behavioral and neurobiological consequences of severe or persistent trauma among youth is a relatively young and burgeoning field but has much to contribute to our understanding of academic achievement of children and adolescents at risk.

We posit that early traumatic stress affects psychological, social, and physiological development, which disrupts learning and academic achievement. Research in developmental biology and neuroscience has led to a new framework for understanding physical and mental health disparities as a result of early childhood adversity, which may have cumulative effects or latent effects if adversity occurs during sensitive periods of development (Shonkoff, Boyce, & McEwen, 2009). These effects of adversity, such as childhood trauma which is characterized as "toxic," are multifaceted and can impact various aspects of functioning and development because "it disrupts brain architecture, affects other organ systems, and leads to stress-management systems that establish relatively lower thresholds for responsiveness that persist throughout life, thereby increasing the risk of stress-related disease and cognitive impairment

well into the adult years" (Shonkoff et al., 2009, p. 2256). Traumatic stress disturbs information processing (van der Kolk & McFarlane, 1996), which can lead to subsequent behavioral and psychiatric consequences (the focus of our analyses) that create barriers to an otherwise successful academic trajectory. Problems with processing include intrusive thoughts, repetition of behaviors related to the trauma that cause harm to others or one's self, avoidance, hyperarousal, difficulties of attention and distractibility, and disorganization in attachment (van der Kolk & McFarlane, 1996).

While both internalizing and externalizing problems may be experienced as a result of trauma, it is the externalizing behaviors that may be more immediately problematic in a school setting. Early experiences of trauma which can affect children's ability to modulate physiological arousal and the subsequent loss of self-regulation is related to self-destructive behaviors, conduct problems, and substance abuse (van der Kolk & McFarlane, 1996). Trauma-related difficulty with self-regulation (Olson, Sameroff, Lunkenheimer, & Kerr, 2009) and attentional processes (Compas & Boyer, 2001) and the trauma-related symptoms of "disorganized or agitated behavior" (American Psychiatric Association, 1994, p. 428) are often interpreted by teachers as disruptive classroom behaviors. Attempts to numb oneself may also manifest through substance use and abuse (Rodgers et al., 2004) that put adolescents at risk for other trauma exposure. Because of the proliferation of zero-tolerance policies, these types of conduct and substance use behaviors can lead to suspension and expulsion, which can exacerbate developmental problems (American Psychological Association Zero Tolerance Task Force, 2008). Individual responses to trauma will vary and those who experience significant levels of subsequent psychological distress may be at greater risk for dropping out of school.

Studies focusing on the mental health correlates of academic achievement tend to be based on convenience samples tied to a specific event (Broberg et al., 2005) or clinical care (Kennedy & Bennett, 2006), while more representative data on school achievement have lacked sufficient information on mental health. Stoep, Weiss, Kuo, Cheney, and Cohen (2003) used the longitudinal Children in Community Study to estimate the risk of school failure in the U.S. population attributable to the prevalence of adolescent psychiatric disorder. This epidemiological study estimated the proportion of dropouts for students with psychiatric disorder at 46%. However, the study is limited in its sampling

of households in upstate New York, which included only 6% minority representation.

Sociodemographic Factors Related to School Dropout

Mental health factors related to school dropout exist in sociodemographic contexts which may moderate their influence. The aggregate dropout rate provided by NCES (Laird et al., 2007) obscures the wide variation of disaggregated dropout rates reported for non-Hispanic White (6.0%), non-Hispanic Black (10.4%), Hispanic (22.4%), and Asian/Pacific Islander youth (2.9%), and for foreign-born Hispanic (36.5%) and non-Hispanic (4.7%) immigrants. Other estimates (Swanson, 2004) suggest dropout rates of up to 50% for Black students and 47% for Hispanic students. Where comprehensive state records are available, Native Americans are shown to be at even greater risk for dropout compared to other minority groups (Stearns & Glennie, 2006). Racial/ethnic differences in educational attainment are confounded with socioeconomic status and urbanicity (Entwisle, Alexander, & Olson, 2005), along with intergenerational patterns of limited academic achievement (Hardy, Astone, Brooks-Gunn, Shapiro, & Miller, 1998). Attainment for foreign-born youth is confounded with circumstances of immigration (Suárez-Orozco, Suárez-Orozco, & Todorova, 2008) and educational and social capital resources of immigrant parents (Hernandez, 1999), as immigration in general, and at older ages, has been shown to be negatively related to school outcomes (Laird et al., 2007). There are also documented patterns of diminished achievement for boys compared to girls (Laird et al., 2007), and these patterns may be moderated by race and ethnicity (Vélez & Saenz, 2001). These confounders are related to risk for trauma and subsequent psychiatric diagnosis (Oswald & Coutinho, 1996).

A recent comparison of urban and suburban districts in the country's largest metropolitan centers found large gaps in graduation rates, the greatest in Baltimore with a graduation rate of less than 35% in contrast to more than 81% in suburban counterparts (Swanson, 2008). Exposure to trauma and stress may be more prevalent for low-income minorities in urban communities, who may experience the greatest impact of neighborhood distress (Crowder & South, 2003). Neighborhood violence in African American communities is related to decreased academic achievement as measured by more frequent absences, lower grades, and diminished expectations for the future (Bowen & Bowen,

1999), as well as lower scores on standardized achievement tests (Thompson & Massat, 2005). Experience of chronic stressful life events was found to be negatively related to grade point average for Latino students (Alva & de Los Reyes, 1999).

Several additional factors have been shown to be related to high school completion rates. Regular employment at an early age (particularly when work exceeds 20 hr per week) may be negatively related to school achievement because of the time taken away from studies or because students from families with limited financial resources must weigh the short-term benefits of work against long-term educational planning (Stearns & Glennie, 2006). Teen pregnancy has also been established as risk factor for girls' high school completion, with greatest risk for girls in high-poverty neighborhoods (Harding, 2003). Teen pregnancy can be cited as both a correlate of dropout as well as a consequence of school failure, with the highest risk of pregnancy at age 16 (Yampolskaya, Brown, & Greenbaum, 2002).

Research Aims and Approach

In this article, we examine the correlates of high school dropout in the United States using retrospective data from a young adult sample from a nationally representative data set, the CPES. While there are limitations associated with retrospective data, Hardt and Rutter's (2004) review suggests that reporting of clearly operationalized adverse experiences during childhood has sufficient validity and reliability to support its use. Results from the CPES have been used to begin building provisional evidence regarding childhood onset of conduct disorder (Nock, Kazdin, Hiripi, & Kessler, 2006), anxiety disorders (Suarez, Polo, Chen, & Alegria, 2009), and long-term consequences of childhood adverse experiences related to adult psychiatric disorders and suicidal ideation (Afifi et al., 2008). Available national data sets of child and adolescent development such as Add Health lack the depth of trauma and psychiatric data found in the CPES that is essential for testing our hypotheses.

For this study, we estimate the weighted prevalence rates for dropout adjusting for sampling design and then test the association of childhood traumatic stress, childhood psychiatric disorder and childhood use of mental health services to dropout status. We examine the association of trauma and mental health on dropout controlling for sociodemographic and psychosocial risk factors such as

race/ethnicity, age of immigration, early employment, and family risk factors such as maternal education level. We hypothesize that experiences of early trauma and early onset of psychiatric disorders will be positively correlated with school dropout, controlling for sociodemographic variables and other risk factors, and that psychiatric disorders will mediate the relation between early trauma and dropout. That is, the psychological consequences of trauma will lead to school dropout, not the trauma experience in and of itself. Furthermore, we hypothesize that mental health services use will be a protective factor against school dropout. Because of the race/ethnic differences in dropout status (Laird et al., 2007), we also explore potential patterns of moderated mediation, specifically the interactions between race/ethnicity and psychiatric disorders and mental health services use as potential mediators of trauma on school dropout.

Method

Sample Design and Data Collection Procedures

This analysis uses data from the CPES. The CPES is composed of three nationally representative household surveys: the National Comorbidity Survey Replication (NCS-R; Kessler & Merikangas, 2004), the National Survey of American Life (NSAL; Jackson et al., 2004), and the National Latino and Asian American Study (NLAAS; Alegria et al., 2004). The CPES surveys were developed under the sponsorship of the National Institute of Mental Health, and the data collection was conducted by the Survey Research Center of the Institute for Social Research at the University of Michigan from early 2001 through the end of 2003. In-person interviews were conducted unless telephone interviews were requested or travel was prohibitive for interviewers. All respondents completed core protocol and screening questions (approximately 2.5 hr); additional sessions may have been necessary to complete follow-up related to screening. Protocols were translated and bilingual interviewers were trained so that non-native English speaking respondents could answer in their native languages. This noninstitutionalized community sample excluded incarcerated individuals or those residing in contained mental health facilities. More detailed information of the sample design and weighting is described by Heeringa et al. (2004). The full sample includes data from 20,013 adults aged 18 and older who participated in face-to-face structured interviews. The subsam-

ple for this analysis is limited to 2,532 cases of young adults aged 21–29, including foreign-born minorities living in the United States.

Age cutoffs for this analysis are based on several factors. Approximately 20% of students experience retention in a grade at least once during their school career and retention is related to higher odds for dropping out of school (Fine & Davis, 2003). Although retention is a strong correlate of later dropout, the minimum age cutoff serves to limit potential cases of 18- to 20-year-olds who have been retained yet remain enrolled in high school as an older student. The upper age range is informed by the World Health Organization definition of "youth" (individuals under the age of 30). We also limit our sample to young adults who are less temporally distant to their high school experiences when asked to retrospectively recall their childhood mental health. Although the U.S. federal government describes youth policies and programs that extend through the age of 25, the WHO definition allows for consideration of the larger age range of emerging adults. This is particularly important for immigrant youth who may experience nonlinear educational patterns and difficult transitions into U.S. schools (Rong & Preissle, 2009). Regulations established by the U.S. Department of Education ensure instruction for recently arrived (< 1 year) Limited English Proficient students (34 CFR Part 200), as well as for students with Individualized Educational Plans (34 CFR Parts 300 and 301). Because immigrant youth may arrive with educational needs that overlap both of these areas there are opportunities for high school enrollment of young adults who immigrate after the age of compulsory general education but who are allowed to attend school up to age 22 (depending on the state). Alternative high school programs with specific supports for English language learners have been developed to better accommodate these older high school students (National Center for the Study of Adult Learning and Literacy, 2004). Including emerging adults, some who have had high school experience within their last 10 years, also allows for a larger sample size and greater statistical power for our analyses. Cases from the NCS-R were limited to U.S.-born non-Latino Whites (excluding all racial/ethnic minorities including Native American respondents as well as foreign-born Whites due to lack of information about age of immigration). African Americans and Afro-Caribbeans (U.S. born and immigrant) were included from the NSAL; Latinos and Asian Americans (U.S. born and immigrant) were included from the NLAAS.

Designations of race/ethnicity presented here are kept consistent with terms used in the CPES data sets so that comparisons can easily be made with other literature from the study.

Measures

Demographic characteristics. Demographic measures include dummy codes for the four major race/ethnicity categories (African American, Afro-Caribbean, Asian, Latino, and non-Latino White) of study participants. The CPES also provides information about subethnicities within the larger categories of Asians and Latinos. Descriptive results detail within group variation by subethnic groups; however, cell sizes are not large enough to include this information in inferential analyses, and so aggregate race/ethnicity is used instead. Non-Latino White was selected as the reference group for analyses because it is composed of nonimmigrant youth with the lowest national dropout rate. Gender was included as a dichotomous independent variable.

Parental education level. Reports of highest year of formal education (number of years of school mother and father completed) were used, as well as recoded dropout status, for both the mother and the father. Level of maternal education was included in regression models because the data were fairly complete compared to paternal education level (9% vs. 23% cases missing), whereas results reported for both parents are included in descriptive results.

Nativity. Four dichotomous variables were created to indicate whether the respondent was: U.S. born (reference category), foreign born and immigrated at age 12 or younger, immigrated at ages 13–17, or immigrated at age 18 or older. In the logistic regression analysis, U.S. born was used as the reference category.

Early youth employment. A dichotomous measure of youth employment was created from a question that asked at what age the individual had first begun working for a period of 6 months or more. Early youth employment was coded as 1 if the age of first regular employment was 15 or younger (an age range where student work permits and restricted hours are required by state and federal law) and coded as 0 if aged 16 or older.

Early unwanted pregnancy. Women in the NLAAS subsample of the CPES were asked if they had ever had an unwanted pregnancy and, if so, the age at first occurrence. Unwanted pregnancy was coded as 1 if it occurred at age 16 or earlier, and otherwise

coded as 0. Because data are limited to Latina and Asian American respondents in the NLAAS and because there is no corresponding information on early unwanted fatherhood only, descriptive statistics are included.

Major childhood trauma. Retrospective reports of significant traumatic life events were collected as part of the posttraumatic stress section of the World Health Organization Composite International Diagnostic Interview (WHO CIDI; Kessler et al., 2004). The WHO CIDI is a fully structured diagnostic instrument administered by trained lay interviewers; diagnoses are based on the definitions and criteria of the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)*. The international standard diagnostic system used is the WHO International Classification of Disease (ICD) 10-symptom criteria. This analysis uses reports of specific trauma events only and not the full diagnosis of posttraumatic stress disorder (PTSD). The WHO CIDI section of PTSD collects comprehensive data on lifetime trauma exposure, including information on 30 specific types of trauma and age of first exposure to each qualifying trauma, and assesses for the presence and severity of PTSD symptoms for each reported exposure. Of the 30 possible types of trauma asked in the WHO CIDI, nine variables identified in the literature as childhood risk factors were examined individually and used to create a single dichotomous variable of major childhood trauma. These questions include:

1. Were you ever involved in a life-threatening automobile accident?
2. Were you ever involved in a major natural disaster, like a devastating flood, hurricane, or earthquake?
3. Were you ever in a man-made disaster, like a fire started by a cigarette, or a bomb explosion?
4. As a child, were you ever badly beaten up by your parents or the people who raised you?
5. Were you ever badly beaten up by anyone else? [not including spouse or romantic partner, which is a separate question]
6. The next two questions are about sexual assault. The first is about rape. We define this as someone either having sexual intercourse with you or penetrating your body with a finger or object when you did not want them to, either by threatening you or by using force, or when you were so young

that you did not know what was happening. Did this ever happen to you?

7. Other than rape, were you ever sexually assaulted or molested?
8. When you were a child, did you ever witness serious physical fights at home, like when your father beat up your mother?
9. Did you ever see atrocities or carnage such as mutilated bodies or mass killings?

Respondents were asked the age at which the trauma event occurred. Major childhood trauma was coded as yes (1) if any one of these trauma events were reported as occurring at age 16 or younger. If none of these events was reported, or if one or more was reported as occurring at age 17 or older, this dichotomous variable was coded as no (0).

Psychiatric diagnoses. Childhood psychiatric disorders were determined by the WHO CIDI, which asks about lifetime disorders and age of onset (past 12-month criteria symptoms were also collected but are beyond the scope of this analysis, which is focused on childhood onset). A set of psychiatric disorders, as diagnosed by responses on the CIDI, were included as potential correlates of school dropout. For each of the following disorders, a dichotomous variable was created and coded as 1 if age of onset was reported as age 16 or younger: depressive disorder, PTSD, anxiety disorder (not including PTSD), substance use disorder (drug abuse/dependence and/or alcohol abuse/dependence), and conduct disorder. Depressive disorder included major depressive episode and/or dysthymia. Although PTSD is of the family of anxiety disorders, we investigated it separately in our descriptive analyses to determine the unique effect of trauma, and we set it aside for our regression analyses because we had used specific trauma events from the PTSD diagnostic checklist for our trauma variables. Anxiety disorder included agoraphobia, general anxiety disorder, panic disorder, and/or social phobia. Any diagnosis of substance abuse or dependence or alcohol abuse or dependence was used to indicate a single category of substance use disorders. Age of onset at 16 or younger is selected as cutoff for lifetime traumatic events and psychiatric disorders to bolster the likelihood that they would co-occur or precede the earliest age that high school dropout might occur. These specific psychiatric disorders were chosen based on epidemiological studies demonstrating that they most commonly emerge and/or peak in adolescence (Costello, Mustillo, Erkanli, Angold, & Keeler, 2003). These

disorders, which are also differentiated by gender, are also more likely to demonstrate high rates for adolescents with preexisting early childhood mental health problems including those which may be related to childhood trauma (Costello et al., 2003). For descriptive purposes, a global variable of any childhood *DSM-IV* diagnosis was created and coded as 1 if criteria for any one of the above disorders was reported or else 0 if no diagnosis was indicated.

Mental health service use. To measure childhood and adolescent mental services use and test it as a potential protective factor, a dichotomous variable was created to include reported services from any of the following providers: psychiatrist, psychologist, social worker, counselor, health professional, nurse, spiritual advisor, or healer. This was coded as 1 if services were used at age 16 or younger or 0 if otherwise.

Dependent variable—dropout status. Statistics on dropout rates are presented in a variety of ways in local and national reporting and depending on the methods used, estimates may vary widely (Kaufman, 2004). For this analysis we use dropout status rate, which is defined as rate for noncompletion of high school using data from young adults aged 29 and younger without regard for the specific year they stopped attending school. This is in contrast to dropout event rates, which calculate the percentage of students who drop out of school in a given year, and is a considerably lower estimate than status rate because of its temporal limits to a 1-year period. The dependent variable is created from a measure of formal years of completed education ("Highest grade of school/college completed?"). The CPES data set recodes years of education into four main categories capturing high school dropout (0–11 years), high school completion (12 years), some college (13–15 years), or undergraduate degree or higher (16 years or more). A dichotomous variable of dropout status was created from this measure (1 = dropout [0–11 years of formal education] and 0 = high school completer [12 or more years of formal education]). Information regarding receipt of a general equivalency diploma (GED) is unavailable across the CPES data set.

Statistical Analyses

Descriptive and inferential analyses were conducted using SAS 9.1 (SAS Institute, Cary, NC). All analyses were weighted to account for the survey sampling design including the intentional oversampling of some subgroups; thus, results presented

are national estimates. First, we estimated the weighted prevalence of high school dropout for a young adult sample of U.S.-born and immigrant respondents ages 18–29. Significance tests for group differences were conducted using a Rao–Scott chi-square statistic for contingency tables with survey data (Rao & Scott, 1984). We also examined correlates of dropout status in logistic regression models including demographic variables, early work experience, early unwanted pregnancy, and childhood trauma experience.

Next, we conducted multiple mediation analysis to examine whether diagnosis of childhood psychiatric disorder along with mental health services use during childhood mediate the relation between major childhood trauma and high school dropout status. To infer mediation, we needed to establish four criteria: (a) significant relation between childhood trauma and high school dropout status, (b) significant relation between the psychiatric diagnosis and services use variables and childhood trauma, (c) significant relation between the psychiatric diagnosis and services use variables and dropout adjusting for childhood trauma, and (d) the relation between childhood trauma and dropout weakens after adjusting for the psychiatric diagnosis and services use variables (MacKinnon, Fairchild, & Fritz, 2007). We infer that the relation between childhood trauma and high school dropout is *completely* mediated by psychiatric diagnosis and services use variables if the regression coefficient for childhood trauma is no longer significant after adjusting for psychiatric diagnosis and services use variables. The psychiatric diagnosis and services use variables were entered in the model simultaneously and tested as a group, which is useful when considering variables that would be theoretically correlated with each other; one or all variables could be significant individual mediators in a multiple mediation model (MacKinnon, Fairchild, & Fritz, 2007). The indirect effect of childhood trauma on dropout that is mediated through psychiatric diagnosis and services use variables is estimated as the total effect of childhood trauma on dropout minus the direct effect of childhood trauma on dropout after adjusting for the psychiatric diagnosis and services use variables. We used bootstrap method to construct the confidence interval for the estimated indirect effect.

Missing maternal education values were multiply imputed using the PROC MI procedure in SAS. Regression models were adjusted for sampling design through a first-order Taylor series approximation, and significance tests were performed

using design-adjusted Wald tests. Odds ratios and 95% confidence intervals are reported.

Results

Prevalence and Descriptive Results

Weighted results indicated that 15.57% dropped out of high school (Table 1). Design-adjusted chi-square results showed significant differences in the distribution of dropout by racial/ethnic group ($p < .001$). Asians had the lowest rate of dropout (5.58%), followed by Whites (8.37%), African Americans (17.19%), and Afro-Caribbeans (19.02%), whereas Latinos had the highest rate of high school dropout (38.89%). The Asian and Latino groups were also broken down by larger subethnicities, and dropout rates were compared using survey-design-adjusted chi-square tests, revealing significant differences between Asian subethnicities ($p < .047$), with the highest dropout rate for Vietnamese (18.68%) compared to Filipinos (5.16%), Chinese (4.02%), and all other Asians (4.41%), and significant differences between Latino subethnicities ($p < .001$) with the lowest rate for Cubans (13.46%) compared to Puerto Ricans (27.50%), Mexicans (45.99%), and all other Latinos (29.17%). When compared against each other, there was no statistical difference between dropout rates of African Americans and Afro-Caribbeans.

There were no significant differences by gender with the male dropout rate at 16.18% and females at 14.98% ($p = .625$). Dropout rates were significantly different between the nativity groups ($p < .001$). Rates were lowest for U.S.-born respondents (12.02%) but more than doubled for respondents who had immigrated to the United States at age 12 or younger (25.40%), more than 4 times as high for immigrants who arrived in the United States as adolescents (51.52%), and almost 3 times the rate for those who immigrated as adults (32.89%). We also looked at dropout rates for Latinos, Asians, and Afro-Caribbeans by immigration age categories. We found that Latinos had the highest dropout rate across all age immigration categories (for age 12 or younger, ages 13–17, and ages 18 and older, the dropout rates were 36%, 63%, and 53% respectively). Afro-Caribbeans have fairly steady dropout rates at the younger (19%) and older (21%) immigration age categories, but a lower rate for those who immigrated between age 13 and 17 (12%). We also observed that Asians had the lowest dropout rates compared to other

Table 1
Sample Characteristics for U.S. Youth Ages 21–29 ($n = 2,532$)

Weighted	Percent of population (SE)	Dropout rate percentage (SE)	<i>p</i> value
Sample dropout rate		15.57 (1.09)	
Gender			
Male ($n = 1,050$)	48.83 (1.64)	16.18 (1.76)	.6253
Female ($n = 1,482$)	51.17 (1.64)	14.98 (1.54)	
Ethnicity: Population prevalence for dropout			
Asian ($n = 404$)	5.20 (0.67)	5.58 (1.76)	< .0001
African American ($n = 585$)	12.41 (1.24)	17.19 (1.66)	
Afro-Caribbean ($n = 280$)	0.97 (0.11)	19.02 (1.74)	
Latino ($n = 593$)	20.13 (2.34)	38.89 (1.99)	
Non-Latino White ($n = 670$)	61.28 (3.24)	8.37 (1.28)	
Nativity			
U.S. born ($n = 1,770$)	83.87 (1.64)	12.02 (0.99)	< .0001
Immigration age 12 or younger ($n = 275$)	5.22 (0.62)	25.40 (3.38)	
Immigration age 13–17 ($n = 149$)	3.06 (0.43)	51.52 (5.37)	
Immigration age 18 or later ($n = 338$)	7.85 (1.06)	32.89 (4.04)	
Youth employment			
6 months or more at age 15 or younger ($n = 412$)	27.35 (2.25)	16.98 (2.49)	.4784
Unwanted pregnancy age 16 or younger			
NLAAS females only ($n = 531$)	4.60 (0.89)	43.93 (6.02)	.0500

Note. NLAAS = National Latino and Asian American Study.

immigrant groups. Asian dropout rates were 9% for immigration category at age 12 or younger, 5% dropout rate for immigration at ages 13–17, and 6% for those who immigrated as young adults. Respondents who dropped out of high school reported significantly lower parental education levels compared to nondropouts: Fifty-three percent reported that their mothers had also dropped out of school ($p < .001$), and 62% reported that their fathers had also dropped out of school ($p < .001$). Dropouts rates were marginally higher among girls from the NLAAS sample who had experienced early unwanted pregnancy (43.93%) compared to girls who did not report that

experience ($p = .050$). The dropout rate for those who had entered the workforce at an early age (16.98%) was similar to those who had not begun early employment ($p = .478$).

Psychiatric Characteristics of Dropouts

Thirty-eight percent of the CPES young adult subsample reported experiencing a major childhood trauma that occurred at age 16 or younger (Table 2). Of those respondents who reported experience of any major childhood trauma, 19.79% dropped out of school, a significantly higher rate than those who did not report childhood trauma (12.97%, $p < .001$). Review of specific trauma experiences found significantly higher dropout rates were for those who had experienced child physical abuse (31.13%), witnessed domestic violence (26.01%), experienced rape (25.34%), were beaten (24.82%), or experienced a natural disaster (22.43%) compared to those who had not experienced those same specific traumas. Similarly, the dropout rate for respondents with childhood onset of substance disorder or conduct disorder was much higher (24.22% and 28.51%, respectively) compared to respondents without those childhood disorders. Almost one third of the sample (32.05%) reported symptoms that indicated childhood onset of one or more DSM-IV diagnoses, and the dropout rate for those respondents was significantly higher than for those without a childhood onset diagnosis (19.75% vs. 13.60%, $p < .01$). However, a lower percentage (17.02%) reported use of any mental health services during that same age range (16 or younger).

Logistic Regression and Mediation Analysis

In Table 3, we present the results of our logistic regression models examining correlates of dropout status. In Model 1, Asians had significantly lower odds of dropping out (OR = 0.41, 95% CI = [0.20, 0.84]) compared to non-Latino White youth adjusting for demographic variables, early work experiences, and childhood trauma experience. In contrast, Afro-Caribbeans (OR = 1.98 [1.14, 3.44]), African Americans (OR = 2.18 [1.40, 3.40]), and Latinos (OR = 2.88 [1.88, 4.44]) were more likely to report dropping out of high school compared to non-Latino Whites. Those who immigrated as emerging adults (age 18 and older) were marginally more likely (OR = 1.54 [1.01, 2.34]) to lack completion of secondary education, in either their home country or the U.S., compared to U.S.-born respondents. With each year of maternal education

Table 2

Rates of Reported Childhood Trauma Experience, Psychiatric Disorder, and Service Use for U.S. Emerging Adults Ages 21–29 ($n = 2,532$)

Weighted	Percent of population (SE)	Dropout rate percentage (SE)		p value
		Experienced trauma	No trauma	
Experience of major childhood trauma at age ≤ 16				
Any major childhood trauma ($n = 1,046$)	38.11 (1.83)	19.79 (1.82)	12.97 (1.27)	.0010
Life threatening car crash ($n = 173$)	6.87 (0.69)	21.52 (4.01)	15.13 (1.10)	.0715
Natural disaster ($n = 296$)	8.93 (0.71)	22.43 (3.62)	14.89 (1.23)	.0426
Manmade disaster ($n = 73$)	3.77 (0.75)	9.56 (3.82)	15.80 (1.12)	.1946
Child physical abuse ($n = 186$)	6.42 (0.55)	31.13 (5.38)	14.50 (1.13)	.0002
Beaten ($n = 136$)	6.30 (0.86)	24.82 (4.52)	14.95 (1.22)	.0246
Raped ($n = 193$)	6.35 (0.68)	25.34 (4.00)	14.90 (1.12)	.0030
Molested ($n = 273$)	9.46 (0.89)	13.62 (2.55)	15.77 (1.21)	.4858
Witnessed domestic violence ($n = 396$)	13.26 (0.94)	26.01 (3.38)	13.97 (1.11)	< .0001
Witnessed atrocities ($n = 41$)	1.43 (0.40)	21.94 (8.58)	15.47 (1.13)	.4133
Dropout rate percentage (SE)				
		With DSM diagnosis	No DSM diagnosis	
Childhood DSM-IV disorder at age ≤ 16				
Any childhood DSM-IV diagnosis ($n = 775$)	32.05 (1.14)	19.75 (1.88)	13.60 (1.34)	.0061
Childhood depressive disorder ($n = 225$)	8.87 (0.79)	17.70 (3.55)	15.36 (1.18)	.5255
Childhood PTSD ($n = 115$)	4.05 (0.51)	19.55 (4.67)	15.40 (1.11)	.3389
Childhood anxiety disorder (non-PTSD; $n = 368$)	14.62 (0.97)	14.76 (1.89)	15.70 (1.19)	.6532
Childhood substance disorder ($n = 143$)	6.73 (0.85)	24.22 (4.31)	14.94 (1.08)	.0107
Childhood conduct disorder ($n = 287$)	10.90 (0.86)	28.51 (3.90)	13.98 (1.21)	< .0001
Received mental health services at age ≤ 16 ($n = 405$)	17.02 (1.09)	13.49 (2.26)	15.99 (1.26)	.3642

Note. DSM-IV = *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*; PTSD = posttraumatic stress disorder.

completed, youth had decreased odds of dropping out of high school (OR = 0.83 [0.78, 0.87]).

Next, we examined possible mediation of the relation between childhood trauma and high school dropout status by psychiatric disorders and mental health services use by assessing the four criteria for establishing mediation (see Figure 1a,b). We found that childhood trauma is significantly associated with dropping out (Table 3, Model 1; OR = 1.65 [1.18, 2.32]) and childhood trauma is also significantly associated with psychiatric diagnosis and services use variables (results not shown), thus satisfying the first two criteria. In Model 2, we added psychiatric diagnosis and services use variables to Model 1 and found that some of these variables were significantly associated with high school dropout status, thus fulfilling the third criteria. Particularly, the odds ratios of dropping out were 2.48 [1.30, 4.74] for those with a childhood onset of substance disorder compared to those without substance disorder, and 2.38 [1.43, 3.96] for those with childhood onset conduct disorder compared to those without conduct disorder. In contrast, mental health services use was not significantly associated

with dropout after adjusting for childhood trauma and other covariates (OR = 0.95 [0.57, 1.59]) and thus failed to satisfy the third criteria for mediation. Therefore, mental health services use was not considered a mediator of the relation between childhood trauma and school dropout. After adjusting for the psychiatric diagnoses variables, the odds ratio of dropping out associated with childhood trauma was reduced to 1.36 [0.98, 1.89], thus satisfying the last criteria. As the odds ratio associated with childhood trauma was no longer statistically significant in Model 2, it suggests that the set of multiple mediators completely mediated the relation between childhood trauma and dropout. The indirect effect of childhood trauma on dropout via the psychiatric diagnosis variables was estimated as a reduction in the odds ratio of dropout by 1.21 [1.11, 1.41] times.

Exploratory Moderated Mediation Analysis

As an additional exploratory analysis, we examined possible moderated mediation of the psychiatric diagnosis and services use variables moderated

Table 3
Series of Weighted Logistic Regressions Predicting Dropout for Combined CPES Sample ($n = 2,532$)

Independent variables	Model 1 Demographic variables and trauma	Model 2 Test of mediation
	OR [95% CI]	OR [95% CI]
Gender		
Male	1.03 [0.67, 1.58]	0.93 [0.61, 1.41]
Female	1	1
Race/ethnicity		
Asian	0.41 [0.20, 0.84]	0.41 [0.20, 0.84]
African American	2.18 [1.40, 3.40]	2.15 [1.37, 3.37]
Afro-Caribbean	1.98 [1.14, 3.44]	1.85 [1.11, 3.06]
Latino	2.88 [1.88, 4.44]	3.01 [1.91, 4.72]
Non-Latino White	1	1
Nativity		
Immigrated age 12 or younger	1.08 [0.73, 1.61]	1.22 [0.82, 1.83]
Immigrated age 13–17	1.60 [0.93, 2.77]	1.92 [1.08, 3.42]
Immigrated age 18 or older	1.54 [1.01, 2.34]	1.82 [1.17, 2.82]
U.S. born	1	1
Maternal education in years	0.83 [0.78, 0.87]	0.82 [0.77, 0.88]
Youth employment age 15 or younger	1.60 [0.94, 2.72]	1.54 [0.92, 2.60]
Major childhood trauma at age 16 or younger	1.65 [1.18, 2.32]	1.36 [0.98, 1.89]
Childhood onset affective disorder		1.36 [0.73, 2.53]
Childhood onset anxiety disorder (non-PTSD)		0.97 [0.66, 1.43]
Childhood onset substance disorder		2.48 [1.30, 4.74]
Childhood onset conduct disorder		2.38 [1.43, 3.96]
Received mental health services at age ≤ 16		0.95 [0.57, 1.59]

Note. Odds ratios and 95% confidence intervals are presented. CPES = Collaborative Psychiatric Epidemiological Surveys; PTSD = posttraumatic stress disorder.

by race/ethnicity (MacKinnon et al., 2007). For this analysis, we used the same model as Model 2 of Table 3 with additional variables that are interactions between each of the psychiatric diagnoses and services use variables and each of the major race/ethnicity groups, adjusting for the same soci-

odemographic variables as in Model 2 of Table 3. When we added the psychiatric diagnosis and services use variables and the interaction between these variables and race/ethnicity to Model 1, the odds ratio of dropping out associated with childhood trauma decreased from 1.65 [1.18, 2.32] to 1.35 [0.97, 1.88] (results not shown). Results suggest that the relation between childhood trauma and dropping out of high school is mediated by psychiatric disorders and their interactions with race/ethnicity. More specifically, Afro-Caribbeans with childhood onset depressive disorders (OR = 8.64 [2.25, 33.11]), Latinos with childhood onset of anxiety disorders (OR = 5.81 [2.26, 14.90]), and African Americans with childhood onset of conduct disorders (OR = 2.70 [1.00, 7.27]) were more likely to report dropping out of high school compared to their non-Latino White counterparts. In contrast, Asians with childhood onset of depressive disorders, childhood onset of anxiety disorders, or those who have received mental health services as children were much less likely to report dropping out of high school compared to their non-Latino White counterparts in the same circumstance ($p < .0001$).

Discussion

Dropout Patterns and Correlates

The aim of this study was to report on factors related to high school dropout among a nationally representative sample of U.S. young adults of diverse ethnic, racial and socioeconomic backgrounds as well as immigration history. Our data present a unique opportunity to examine both mental health and childhood traumatic events as factors that may affect school achievement. Childhood exposure to trauma was related to higher risk for school dropout as mediated by childhood psychiatric diagnoses. Individuals who had reported childhood diagnostic indicators of conduct disorder or substance abuse were almost 2½ times more likely to drop out of school. Behaviors signaling these specific disorders not only interfere with learning but are also likely to lead to punishment and exclusion from academic activities without benefit of necessary therapeutic interventions (American Psychological Association Zero Tolerance Task Force, 2008).

We found the rate of dropout among African Americans to be double that of non-Latino Whites and the dropout rate for Latinos to be double that of African Americans and Afro-Caribbeans, while

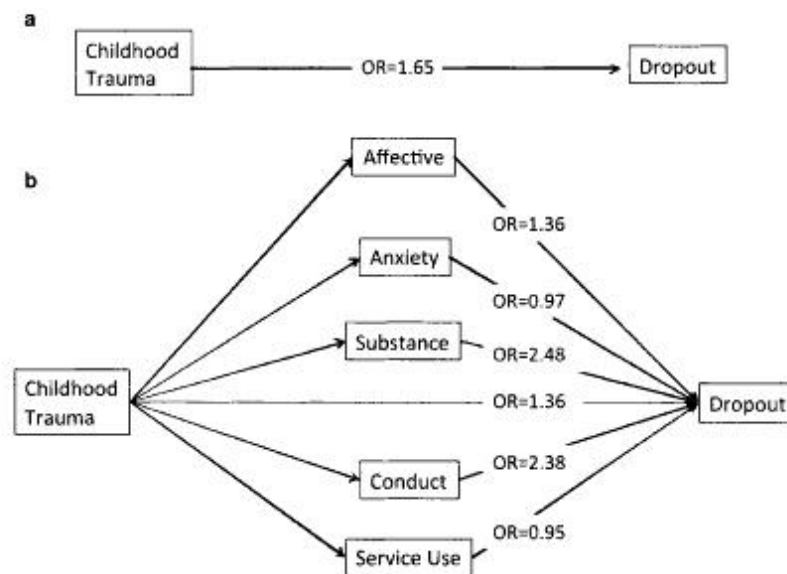


Figure 1. Total effect of childhood trauma on dropout (a) and indirect effect of childhood trauma on dropout via multiple mediators: DSM-IV and mental health services use (b). Odds ratios presented.

the dropout rate for Asians was lower than their non-Latino White counterparts. In fact, close to 40% of Latinos in our sample have a history of dropping out of school and this is followed by 17% of African Americans. In addition, we found that upon closer examination, the significantly lower rate of dropout for Asian students may obscure risk for specific Southeast Asian subgroups. The dropout rate for Vietnamese young adults in our sample was similar to that of Afro-Caribbeans (18.68% compared to 19.02%). Given the small sample sizes for the Afro-Caribbean ($n = 280$) and Vietnamese ($n = 63$) subgroups and the potential influence of patterns of immigration, these relations should be explored further in future research.

Although the NCES, U.S. Department of Education dropout rate of 9.4% (Laird et al., 2007), and the CPES rate for young adults of 16% are not fully aligned, there are a number of possible explanations for the difference. NCES data reported that in the United States, 22% of Latinos, 10% of African Americans, 6% of non-Latino Whites, and 3% of Asians drop out of school (Laird et al., 2007), while the CPES results showed the same rank order but provided higher rates for each racial/ethnic category. The CPES data are derived directly from young adult respondents and provide greater distinctions between subethnic categories. For example, the NCES aggregated rate for Asian students is lower than that of the CPES; however, the CPES disaggregated rates also reveal the wide discrepancies between various Asian subethnicities. The

CPES also sampled individuals who would not have been counted in NCES data pools if they immigrated as adolescents but did not enter the public school system. Data for the NCES rates are derived from multiple sources including household interviews, public school records, and administrative records kept by the GED Testing Service. Because there is no standardized system of keeping track of dropout status in U.S. public school records, these are the most vulnerable to inconsistency and inaccuracy (Kaufman, 2004). In some states students are not counted as dropouts although they may be expelled or incarcerated, nor are they counted as noncompleters even if they do not pass required proficiency tests for high school graduation (Lofstrom, 2007). Neither the NCES nor the CPES include data on incarcerated youth, yet estimates of dropout rates vary depending on federal (30%) or state (40%) inmate status and death row (50%) status (U.S. Department of Justice Bureau of Justice Statistics, 2002).

Race, Ethnicity, Immigration, and Dropout in the United States

We found that immigration status is an important correlate of dropout, even when adjusting for mental health, trauma, and potential stressors such as early youth employment. Among minority youth, immigrant adjustment (vs. being U.S. born) and growing up in a disenfranchised community poses risks for school dropout (Vélez, 1989). The

increased odds of dropping out for immigrant adolescents underscores the importance of examining adjustment challenges for youth immigrating at this critically important developmental stage, including issues such as identity development, potential risk behaviors, and trauma (Finkelhor, Ormrod, & Turner, 2007). Examining potential protective factors, Fuligni (1997) studied approximately 1,100 adolescents from Latino, East Asian, Filipino, and European backgrounds and their own reports of academic attitudes and behaviors as well as those of their parents and peers. Course grades for first- and second-generation students were higher for mathematics and English compared to peers from native families. Only a small portion of their success could be attributed to their socioeconomic background; a more significant correlate of achievement was a strong emphasis on education shared by youth, parents, and peers. Demographic and psychosocial factors were also important in understanding the variation in academic performance among the immigrant students themselves. Similarly, a study of Caribbean immigrant youth found higher ratings of academic self-concept for first- and second-generation compared to third-generation counterparts (Mitchell, 2005).

However, both immigration and adolescence are risk factors for traumatic experiences (Jaycox et al., 2002; Kataoka et al., 2003) and other significant stressors, which can result in mental health disorders such as anxiety and behavioral disorders (Jaycox et al., 2002; Kataoka et al., 2003; Lemos-Miller & Kearney, 2006). Adolescents with PTSD also commonly meet criteria for substance use disorders and other psychiatric disorders including depressive disorders (Donnelly & Amaya-Jackson, 2002). The temporal sequence of these problems is difficult to determine due to a dearth of longitudinal studies examining the relation between trauma, PTSD, and substance abuse disorders in children and adolescents. However, Kilpatrick et al. (2000) found that PTSD mediated the relation between victimization and risk for current substance use disorder and delinquent behavior. We found that psychiatric disorders, specifically substance abuse and conduct disorders, mediate the relation between childhood trauma and dropout status. These two disorders are associated with poor academic performance, truancy, and deviant behaviors that violate school policies, which often result in suspension or expulsion (Townsend, Flisher, & King, 2007). While we found no relation between services use and dropout, reported services use was limited. Such use may be protective and provide much-needed

intervention if referrals to school mental health services are increased and used in addition to, or instead of, simply punitive responses for these students.

Empirical research findings suggest that for adolescents, cultural assimilation is a risk factor for increases in negative health behaviors and mental health problems. Conversely, biculturalism appears to be an emerging protective factor that buffers acculturative stress, enhances sociocognitive functioning, and increases academic achievement (Pantín et al., 2003). In our sample, individuals who immigrated to the United States as emerging adults still experience significant reduced odds of completing at least 12 years of education compared to their U.S.-born peers. Given the timing of immigration, these students would likely not have completed secondary school in their home country (Wechsler & Oakland, 1990), although we must also take into account the possibility of variation in years of schooling needed to complete secondary education in international educational systems (ranging from ages 17 to 20). For example, Mexico has an expected graduation age of 18 with reported rates of high school graduation at 40% (Organisation for Economic Co-operation and Development, 2007). At the least we can assume more limited formal education for older adolescent immigrants and restricted opportunities for entry into the U.S. educational system. Limited educational outcomes may be related to some of the above risk and mental health factors, but also likely related to being an older student upon arrival with the competing employment and financial stressors attached to immigration status. Emerging adult immigrants may be particularly underrepresented among school completers, yet this is also a much underserved population in regard to mental health services and educational programming (Suárez-Orozco et al., 2008).

Mental Health in a Racial Ethnic Context

The exploratory analyses we conducted to test moderated mediation revealed a statistical interaction showing an effect of childhood trauma on dropout that was mediated by psychiatric illness but that differs by race and ethnicity. Specifically, African Americans with childhood onset conduct disorders and Afro-Caribbean individuals who have had childhood depressive disorders are more likely to drop out compared to non-Latino Whites with similar histories. This outcome likely represents a particular risk for dropout among Black

students, which is further exacerbated by trauma and psychiatric illness. The vulnerability for dropout given a history of mental health need among Black students has been found in the literature to include the lack of culturally appropriate treatment, chronic and recurrent trauma and stress, poverty, poor schools, and communities with an overabundance of violence and disproportionate representation in the juvenile justice system (Kennedy & Bennett, 2006; McGauhey & Starfield, 1993; Oswald & Coutinho, 1996).

Similarly, Latinos with childhood anxiety disorder are more likely to dropout than non-Latino Whites with a history of trauma and anxiety. Again, the ethnic and racial context of having an anxiety disorder for Latinos may be compounded by quality and access to mental health services and the psychosocial context of the trauma and anxiety including poverty, and for immigrants the varying levels of psychosocial adjustment and stress (Jaycox et al., 2002). This may explain why Latinos were the only ethnic group in our sample with an increase in odds for dropout when DSM and service use variables were added to the model. Kataoka et al. (2003) found that close to 30% of Latino youth in a middle school composed largely of immigrants suffered from PTSD and or other anxiety symptoms. These findings related to ethnicity and race support the need to strengthen research and practice regarding culturally appropriate assessment and trauma-informed interventions for particularly vulnerable youth populations.

Limitations

This data set lacks information about specific degrees attained, as information on high school diploma, GED, or college or higher education degree was not collected as part of the survey protocol. The attainment of a GED is correlated with individual motivation and personality differences (Entwistle, Alexander, & Olson, 2004), which may also be associated with mental health outcomes. Given the impact of poverty on educational attainment, the study is further limited by lack of information on family income during childhood, despite being able to control for parental education. Although attention deficit hyperactivity disorder (ADHD) is a psychiatric risk factor associated with diminished academic achievement and school dropout (Barbarese, Katusic, Colligan, Weaver, & Jacobsen, 2007), it was not included in the data collection protocol across the CPES sample because of concerns of poor reliability in retrospective

reporting for symptoms of this particular psychiatric disorder (Mannuzza, Klein, Klein, Bessler, & ShROUT, 2002). Additional studies are needed to tease out the specific effects of ADHD and PTSD, as ADHD is often comorbid with anxiety disorders (Costello et al., 2003).

Childhood neglect may be just as disruptive to educational achievement (Rodgers et al., 2004) and may operate in a pattern similar to that of trauma, associated with dropout and mediated by psychiatric diagnosis. However, the CPES does not contain the same depth of information about childhood neglect across the sample. Because a dose effect of childhood adversity has been found to be associated with greater risk for adult mental health disorders (Edwards, Holden, Felitti, & Anda, 2003), further research is needed to examine the comparative influence of trauma and neglect on educational outcomes and to explore the timing, frequency, intensity, and co-occurrence and interaction of the various types of both trauma and neglect, as well the impact of chronic childhood adversity versus time-limited or acute trauma events.

Theoretical and Practical Implications

Early trauma experiences may have a significant impact on academic achievement and subsequent risk of dropout, yet only recently have educational systems begun to direct attention to psychological support and intervention services; the limited services that do exist tend to be marginalized and fragmented within schools (Rappaport, Osher, Garrison, Anderson-Ketchmark, & Dwyer, 2003). Teacher preparation at pre-service and in-service professional development is limited in providing any training in the area of mental health (Koller, Osterlind, Paris, & Weston, 2004). Psychiatric conditions may be interpreted by educators with limited knowledge of mental health as simply not caring about school or as disruptive behavior that should be dealt with punitively rather than therapeutically, and this may be exacerbated for minority students where studies have shown lower teacher expectations of competence (Good, 1987).

Mental health services use was not identified as a protective factor, and while there did not appear to be significantly greater use of services by dropouts, the limited use reported (relative to psychiatric disorders identified) may reflect the severity of psychiatric disorders. School mental health systems often lack adequate integration and collaboration between school staff and mental health professionals (Rappaport et al., 2003). Improving these

collaborations would improve student achievement outcomes as well as student mental health. Improved screening tools and referral strategies are needed to identify student mental health needs and provide adequate services, especially for underserved and immigrant populations.

Policy Implications

Given that national and local educational policy is increasingly focused on accountability, it is important to expand concerns about scores on standardized achievement tests to the amelioration of dropout rates (Darling-Hammond, 2006). Multi-dimensional approaches that attend to intellectual, physical, and mental health could significantly increase school achievement (Lee & Janik, 2006). Gleason and Dynarski (2002) in their analysis of dropout programs supported by the U.S. Department of Education found that multiple factors best identified those students most at risk and suggest that greater efforts be made to include attention to psychological factors in developing programs that target dropout prevention. Some encouraging dropout prevention programs that integrate access to mental health services have been described for urban students in national (Lever et al., 2004) and international (Graeff-Martins et al., 2006) settings. Specific strategies such as training in coping skills have also been suggested in response to students' experience of stressful life events related to risk of dropout (Hess & Copeland, 2001). Focused investigation of mental health correlates of academic achievement outcomes is relatively new and the results presented here underscore the importance of continued exploration into the understanding mechanisms of risk and for developing academic interventions with integrated mental health components.

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